DEVELOPING IMPROVEMENT STRATEGY TO INCREASE LOGISTICS SERVICE QUALITY AND MITIGATE RISKS IN PT. TIGA PERMATA LOGISTIK AND PT. TIGA PERMATA EKSPRES

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INTRODUCTION

LITERATURE REVIEW

RESEARCH METHODOLOGY

DATA COLLECTION & PROCESSING

ANALYSIS OF DETAILED STRATEGY

CONCLUSION & SUGGESTION

BACKGROUND

Globalization

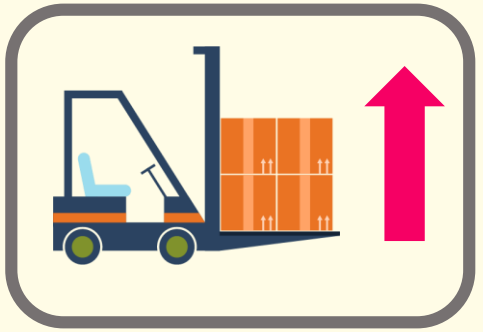
AEC

Market expansion

Export & Import

Demand & Supply

Logistic Activities



3PL 3PE

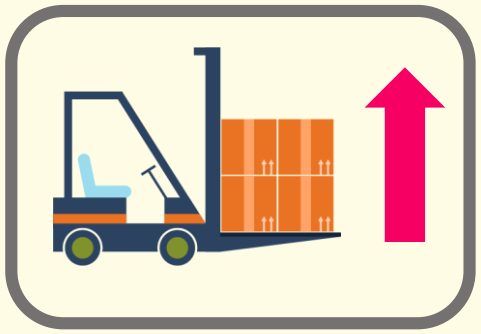
BACKGROUND

Asosiasi Logistik Indonesia : **3PL value business grew** from US$ 150 billion in 2013 to US$ 170 billion in 2014

Gopal R predicted that Indonesia's **logistics industry market** to **grow about 14-15% within the next 5 years**

Indonesia's **Logistics Performance Index score has improved by 0.14** compare to 2012, and moved up on **global rank from 59 to 53**

Logistic Activities



Third Party Logistics

Competition

INCREASE service quality

Provide service in an **EFFICIENT** way

BACKGROUND

INCREASE
service quality

Provide service in an **EFFICIENT** way

3PL®

3PE®

overwhelmed in providing and arranging the space in warehouse

on-time delivery = 99% of all the shipments

on-time delivery **only**
74.86% of all the shipments

MITIGATE RISK

IMPROVE LSQ

STRATEGY

3PL 3PE®

PROBLEM FORMULATION

How to **develop improvement strategy**

to **mitigate risks** and **increase Logistics Service Quality (LSQ)**

in PT. Tiga Permata Logistik and PT. Tiga Permata Ekspres

by **using House of Risk (HOR)**.

OBJECTIVES

1 To develop Logistics Service Quality (LSQ) measurement in PT. Tiga Permata Logistik and PT. Tiga Permata Ekspres.

2 To measure Logistics Service Quality (LSQ) in PT. Tiga Permata Logistik and PT. Tiga Permata Ekspres.

3 To analyze critical risks that are required to be mitigated in PT. Tiga Permata Logistik and PT. Tiga Permata Ekspres.

4 To develop improvement plan for PT. Tiga Permata Logistik and PT. Tiga Permata Ekspres.

BENEFIT

The logistics service provider/company will be able to improve the logistics service quality.

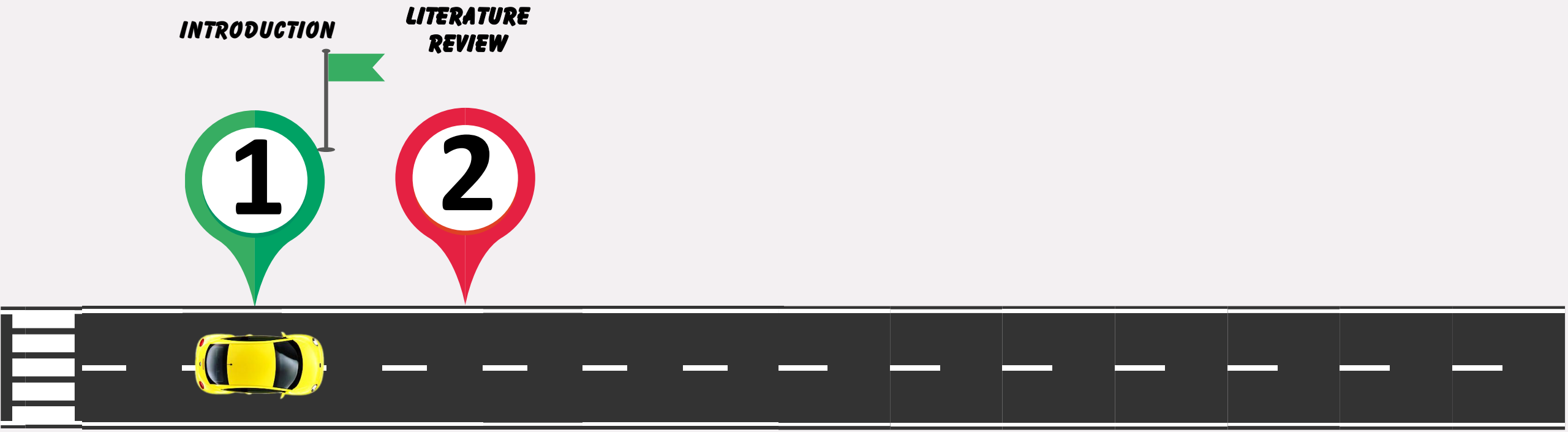
3PL 3PE

LIMITATIONS

1. The research uses the data on January – May 2016.
2. The research will focus on warehousing and shipping activities.
3. The research proposes improvement strategy, without controlling the implementation of it.

ASSUMPTIONS

1. Business activities in PT. Tiga Permata Logistik and PT. Tiga Permata Ekspres normally run during this research.
2. All the activities carried in warehousing and shipping are in accordance with the activities identified in this research.
3. The data used in this research represents the whole data in PT. Tiga Permata Logistik and PT. Tiga Permata Ekspres.
4. The objects of this research, which are PT. Tiga Permata Logistik and PT. Tiga Permata Ekspres represent other logistics provider companies which also can implement the strategy proposed by this research.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LITERATURE REVIEW

RISK MANAGEMENT

HOUSE OF RISK

LOGISTICS SERVICE QUALITY

FMEA

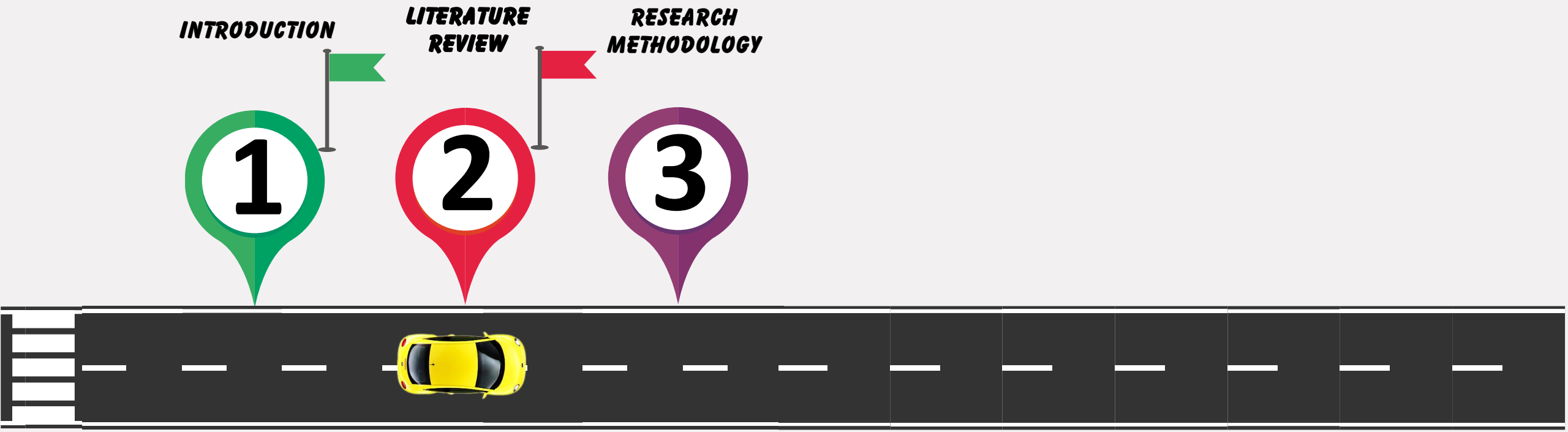
THIRD PARTY LOGISTICS

CAUSE-AND-EFFECT DIAGRAM

LOGISTICS

PARETO CHART

3PL 3PE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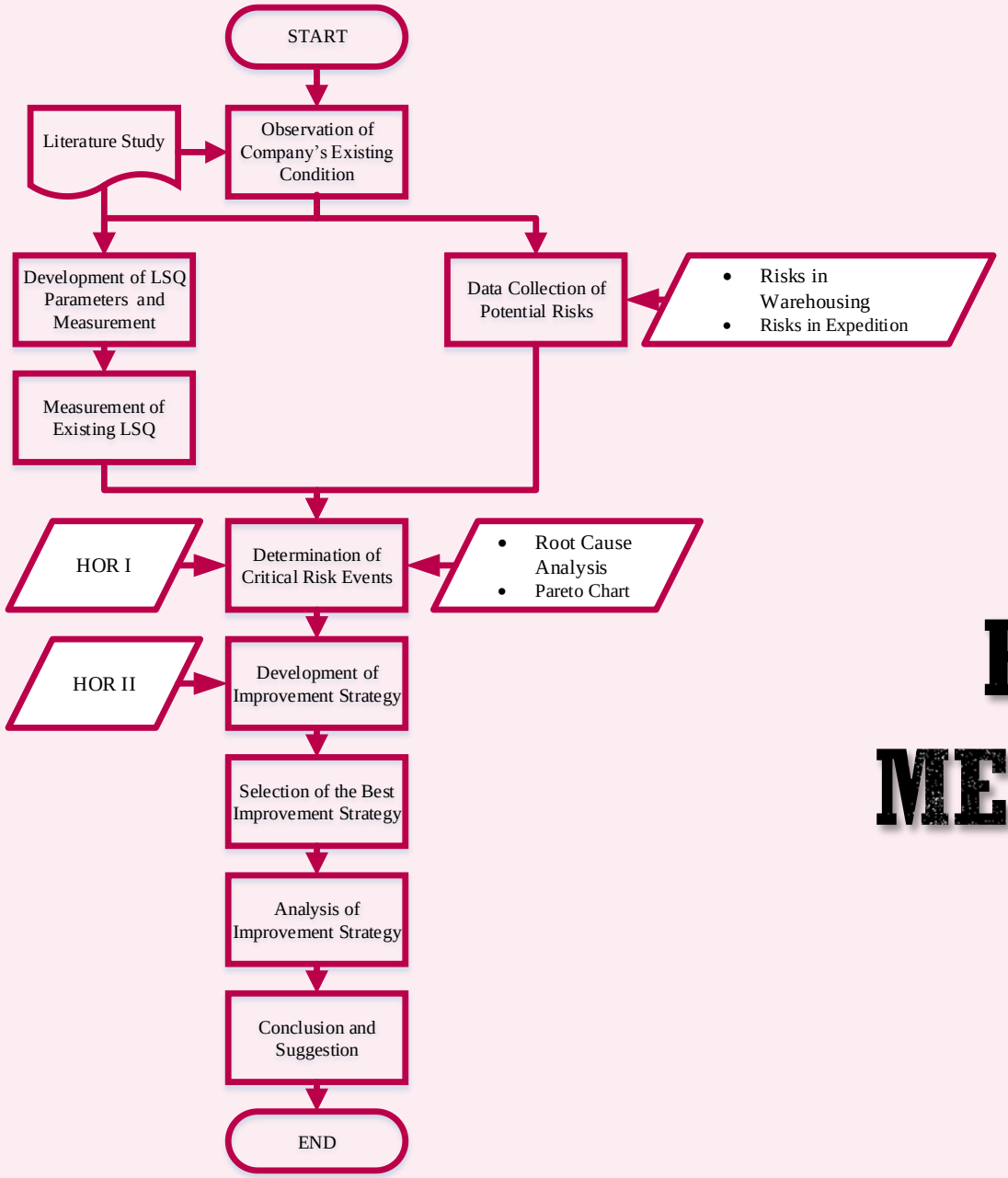


RESEARCH METHODOLOGY

HOR I

Risk Event (E_i)	Risk Agent (A_i)							Severity of Risk Event i (S_i)
	A_1	A_2	A_3	A_4	A_5	A_6	A_7	
E_1	R_{11}	R_{12}	R_{13}					S_1
E_2	R_{21}	R_{22}						S_2
E_3	R_{31}							S_3
E_4	R_{41}							S_4
E_5								S_5
E_6								S_6
E_7								S_7
Occurrence of agent j	O_1	O_2	O_3	O_4	O_5	O_6	O_7	
Aggregate risk potential j	ARP_1	ARP_2	ARP_3	ARP_4	ARP_5	ARP_6	ARP_7	
Priority rank of agent j								

$$ARP_j = O_j \sum_i S_i R_{ij}$$

1 = weak
3 = moderate
9 = strong

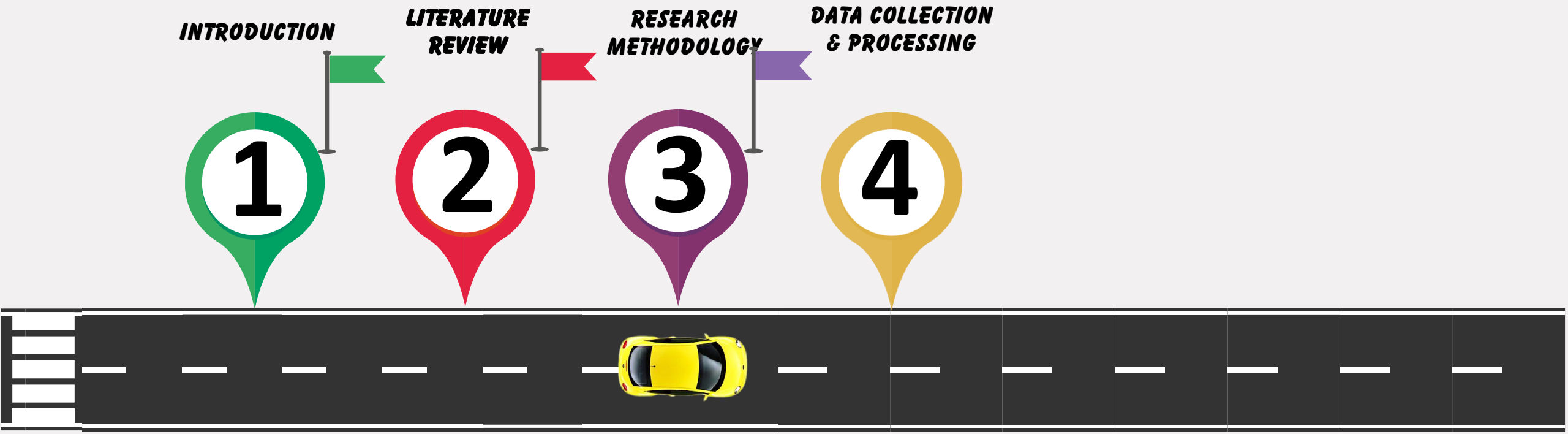
HOR II

To be treated risk agent (A_i)	Preventive action (PA_i)					Aggregate risk potentials (ARP_j)
	PA_1	PA_2	PA_3	PA_4	PA_5	
A_1	R_{11}	R_{12}	R_{13}			ARP_1
A_2	R_{21}	R_{22}				ARP_2
A_3	R_{31}					ARP_3
A_4	R_{41}			.		ARP_4
Total effectiveness of action *k*	TE_1	TE_2	TE_3	TE_4	TE_5	
Degree of difficulty performing action *k*	D_1	D_2	D_3	D_4	D_5	
Effectiveness to difficulty ratio	ETD_1	ETD_2	ETD_3	ETD_4	ETD_5	
Rank of priority	R_1	R_2	R_3	R_4	R_5	

$$TE_k = \sum_j ARP_j E_{jk}$$

$$ETD_k = TE_k / D_k$$

3 = easy
4 = moderate
5 = hard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SOP

→ Used in determining all risks potentially occur.

WAREHOUSE	EXPEDITION
Inbound	Pre-delivery
Outbound	Delivery
Transport Management	Post-delivery
Return	

KPI

→ Used in developing LSQ

WAREHOUSE	EXPEDITION
Warehouse Accuracy	On-time Delivery
	POD Return

KPI - EXPEDITION (ON-TIME DELIVERY)

- Consolidated shipment

Month	Late Delivery	On Time Delivery	Delivering	LATE (%)	ON TIME (%)	DELIVERING (%)	Grand Total
January	36	65	0	35.64%	64.36%	0.00%	101
February	35	57	0	38.04%	61.96%	0.00%	92
March	46	63	0	42.20%	57.80%	0.00%	109
April	38	57	0	40.00%	60.00%	0.00%	95
May	32	47	16	33.68%	49.47%	16.84%	95
Average				37.91%	58.72%	3.37%	98

- Trucking

Month	Late Delivery	On Time Delivery	Delivering	LATE (%)	ON TIME (%)	DELIVERING (%)	Grand Total
January	20	137	0	12.74%	87.26%	0.00%	157
February	13	102	0	11.30%	88.70%	0.00%	115
March	14	177	0	7.33%	92.67%	0.00%	191
April	3	130	0	2.26%	97.74%	0.00%	133
May	5	133	12	3.33%	88.67%	8.00%	150
Average				7.40%	91.00%	1.60%	7.39%

KPI - EXPEDITION (POD RETURN)

- Consolidated shipment

Month	Late POD	On Time POD	Delivering	LATE (%)	ON TIME (%)	WAITING (%)	Grand Total
January	42	41	18	41.58%	40.59%	17.82%	101
February	39	33	20	42.39%	35.87%	21.74%	92
March	49	29	31	44.95%	26.61%	28.44%	109
April	31	48	16	32.63%	50.53%	16.84%	95
May	27	57	11	28.42%	60.00%	11.58%	95
Average				38.00%	42.72%	19.28%	98

- Trucking

Month	Late POD	On Time POD	Delivering	LATE (%)	ON TIME (%)	DELIVERING (%)	Grand Total
January	65	90	2	41.40%	57.32%	1.27%	157
February	47	62	6	40.87%	53.91%	5.22%	115
March	87	90	14	45.55%	47.12%	7.33%	191
April	35	95	3	26.32%	71.43%	2.26%	133
May	31	98	21	20.67%	65.33%	14.00%	150
Average				34.96%	59.02%	6.02%	149

KPI - WAREHOUSE (WAREHOUSE ACCURACY)

Month	Total Lines	Total Match Lines	Accuracy Percentage (%)	Total Blank Count Sheet
January	2783	2763	99.28%	8
February	1427	1392	97.55%	12
March	1112	1107	99.55%	1
April	663	657	99.10%	0
May	89	89	100.00%	0
Average	1215	1202	99.10%	4

DEVELOPMENT OF LSQ INDICATOR

No.	Indicator	Description
1	Lead Time	Time occurred in order processing process (inbound)
		Time occurred in material/goods unloading process, including physical checking, coloring, packaging, etc (inbound)
		Time occurred in material/goods storage (inbound)
		Time occurred in location recording process (inbound)
		Time occurred in documents preparation, until picking list created (outbound)
		Time occurred material/goods picking and checking process (outbound)
		Time occurred in documents and transportation preparation (transport)
		Time occurred in material/goods loading process (transport)
		Time occurred from receiving Return Note until transportation departure (return)
		Time occurred in material/goods checking (return)
		Time occurred in updating database (return)
		Time occurred from request arrival until documents preparation (expedition)
		Time occurred in goods loading process (expedition)
		Time occurred in delivery (expedition)
		Time occurred in POD receipt process (expedition)
2	Reliability	The ability to send POD to the customer to the due date.
		The ability to deliver orders to the due date.
3	Completeness	The ability to deliver full orders in accordance with customer's order.
4	Flexibility	The ability to handle special request or urgent orders.
5	Correctness	The ability to sustain warehouse accuracy.
		The ability to dispatch the right goods or orders.
6	Carefulness	The ability to keep goods undamaged during the whole shipping process.

MEASUREMENT OF LSQ INDICATOR

- Lead Time

Operations	Activities	Targeted Lead Time	Average Actual Lead Time	Achievement (%)

- Reliability

$$Reliability = \frac{number\ of\ POD\ sent\ to\ the\ due\ date}{number\ of\ POD\ required\ to\ the\ due\ date}\ x\ 100\%$$

$$Reliability = \frac{number\ of\ orders\ delivered\ to\ the\ due\ date}{number\ of\ orders\ required\ to\ the\ due\ date}\ x\ 100\%$$

- Completeness

$$Completeness = \frac{number\ of\ full\ orders\ delivered\ in\ a\ period}{total\ number\ of\ orders\ delivered\ in\ the\ same\ period}\ x\ 100\%$$

MEASUREMENT OF LSQ INDICATOR

- Flexibility

$$Flexibility = \frac{number\ of\ special/urgent\ orders\ confirmed\ to\ the\ customer}{number\ of\ special/urgent\ orders\ required\ by\ customer}\ x\ 100\%$$

- Correctness

$$Correctness = \frac{number\ of\ match\ lines\ in\ actual\ condition}{number\ of\ match\ lines\ recorded\ by\ system}\ x\ 100\%$$

$$Correctness = 100\% - \left(\frac{number\ of\ orders\ dispatched\ incorrectly\ in\ a\ period}{number\ of\ orders\ dispatched\ in\ that\ period}\ x\ 100\%\right)$$

- Carefulness

$$Carefulness = \frac{number\ of undamaged\ orders\ during\ shipping}{total\ number\ of\ orders\ delivered\ in\ a\ period}\ x\ 100\%$$

ACHIEVEMENT OF LSQ INDICATOR

(Ii)	Indicator	Factor	Achievement (%)
I1	Lead Time	Fulfillment of targeted lead time	91%
I2	Reliability	Consignment of POD to the due date	50.87%
		Orders delivery to the due date	74.86%
I3	Completeness	Full orders delivery	100%
I4	Flexibility	Confirmation and handling of special/urgent request	95.10%
I5	Correctness	Warehouse accuracy	99.10%
		Dispatch of correct goods/orders	100%
I6	Carefulness	Undamaged goods during shipping	99.57%

SEVERITY, OCCURRENCE, CORRELATION

Severity	(Ii)	Indicator	C	(Pi)	Problem	Occurrence
4	I1	Lead Time	9	P1	Targeted lead time cannot be fulfilled	9
7	I2	Reliability	9	P2	POD is not sent to the due date	9
			9	P3	Orders are not delivered to the due date	9
7	I3	Completeness	9	P4	Orders are not fully delivered	2
4	I4	Flexibility	9	P5	Special/urgent request is not confirmed and handled	7
5	I5	Correctness	9	P6	Low warehouse accuracy	7
			3	P7	Goods/orders are not sent correctly	2
4	I6	Carefulness	9	P8	Goods are damaged during shipping	6

AGGREGATE RISK POTENTIAL (ARP)

$$ARP_j = O_j \sum_i S_i R_{ij}$$

- Example of calculation

$$ARP_5 = O_5 x\ [(S_3 x R_{3.5}) + (S_5 x R_{5.5}) + (S_6 x R_{6.5}) + (S_{12} x R_{12.5}) + (S_{14} x R_{14.5}) + (S_{20} x R_{20.5}) + (S_{26} x R_{26.5})]$$

$$ARP_5 = 7x\ [(7x9) + (7x9) + (3x1) + (6x3) + (6x1) + (5x9) + (6x3) + (6x3)]$$

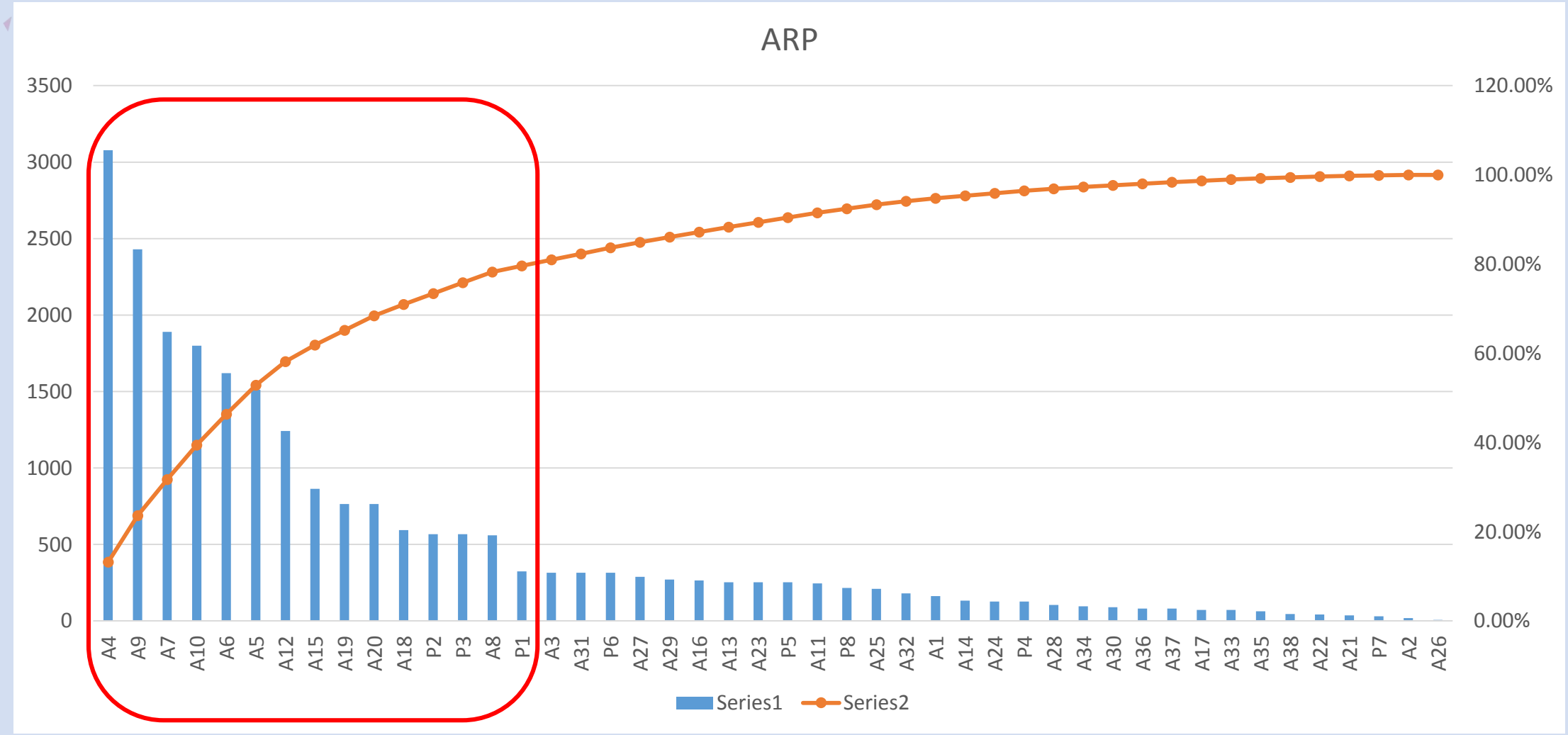
$$ARP_5 = 1512$$

AGGREGATE RISK POTENTIAL (ARP)

(Ai)	Risk Agent	ARP
A1	Customer does not send pre alert (sudden request)	162
A2	Unoptimized space arrangement	18
A3	Customer does not know information about required documents	315
A4	Staff carelessness	3078
A5	Human error in checking	1512
A6	Goods are not properly arranged into the truck	1620
A7	Goods are not properly packed	1890
A8	Human error in inputting data	560
A9	Staff indiscipline	2430
A10	Staffs are not responsive	1799
A11	System error	245
A12	Truck tarpaulins or box leakage	1242
A13	No coordination between customer and receiver	252
A14	Vehicle problems related to the maintenance	132
A15	Driver stops repeatedly / too often	864
A16	Force majeure	264
A17	Incorrect material information	72
A18	Lack of friendliness in customer service	594
A19	Lack of knowledge related to problem solving	765
A20	Lack of ability in handling the problem or complaint	765
A21	Staff is not stand by	36
A22	Incorrect information from customer	42
A23	Human error in marking destination	252
A24	Lack of route optimization knowledge	126
A25	Unoptimized fleet assignment	210
A26	Human error in fleet assignment	6
A27	Lack number of fleet available	288
A28	Error in planning the multidrop route	105
A29	Long queue in the port	270
A30	Overload cargo	90
A31	Change in ship departure schedule	315
A32	Airline embargo	180
A33	Transporter cannot be contacted	72
A34	Transporter is not responsive	96
A35	Lack of information about documents required	63
A36	There is no good communication between admin and customers	81
A37	Lack of information about payment	81
A38	Unclear SOP related to the payment	45

(Pi)	Problem	ARP
P1	Targeted lead time cannot be fulfilled	324
P2	POD is not sent to the due date	567
P3	Orders are not delivered to the due date	567
P4	Orders are not fully delivered	126
P5	Special/urgent request is not confirmed and handled	252
P6	Low warehouse accuracy	315
P7	Goods/orders are not sent correctly	30
P8	Goods are damaged during shipping	216

RISK EVALUATION



DEVELOPMENT OF IMPROVEMENT STRATEGY

Risk Agent or Problem		Improvement Strategy		Description
A4	Staff carelessness	PA01	The implementation of "Zero Error" principle.	The implementation of "Zero Error" principle requires the direct controlling done by manager to ensure that each staff is focus to the job description/task. It is done in order to minimize error in every task/activity.
		PA02	Inspection/quality control.	The inspection/quality control activity is added at the end of each process in which the quality is a main focus (e.g., labelling process, storing).
		PA03	Reward and punishment system.	Reward (e.g., incentive) is given to the staff who fulfills certain target, as the achievement The punishment (e.g., warning, retribution) is given to the staff who cannot fulfill the target or even causes the loss for company. It also consists of "Staff of the Month" announcement (for both the highest and lowest achievement) monthly to motivate employee to do their tasks better.
		PA04	Training to upgrade skill.	Training is necessary to be conducted in order to enhance the required skills of staffs, according to their job/tasks.
A9	Staff indiscipline	PA05	The coordinator makes plan, target, and gives directions.	The coordinator or supervisor makes clear, written plans and target to the staff about according to the tasks to do. Besides, the coordinator also gives directions about how to do task efficiently. Thus, the staff can be more motivated to do their task faster and more focus.
		PA01	The implementation of "Zero Error" principle.	The implementation of "Zero Error" principle requires the direct controlling done by manager to ensure that each staff is focus to the job description/task. It is done in order to minimize error in every task/activity.
		PA06	Periodical evaluation.	The evaluation of employees' performance in each team is done periodically led by supervisor or team coordinator.
		PA03	Reward and punishment system.	Reward (e.g., incentive) is given to the staff who fulfills certain target, as the achievement The punishment (e.g., warning, retribution) is given to the staff who cannot fulfill the target or even causes the loss for company. It also consists of "Staff of the Month" announcement (for both the highest and lowest achievement) monthly to motivate employee to do their tasks better.
A7	Goods are not properly packed	PA01	The implementation of "Zero Error" principle.	The implementation of "Zero Error" principle requires the direct controlling done by manager to ensure that each staff is focus to the job description/task. It is done in order to minimize error in every task/activity.
		PA02	Inspection/quality control.	The inspection/quality control activity is added at the end of each process in which the quality is a main focus (e.g., labelling process, storing).

EVALUATION OF IMPROVEMENT STRATEGY

- Total Effectiveness of Action (TEk)

$$TE_k = \sum_j ARP_j E_{jk} \qquad \forall k$$

$$TE_{PA01} = (\mathrm{ARP}_4\ x\ \mathrm{E}_{41}) + (\mathrm{ARP}_9\ x\ \mathrm{E}_{91}) + (\mathrm{ARP}_7\ x\ \mathrm{E}_{71}) + (\mathrm{ARP}_5\ x\ \mathrm{E}_{51}) + (\mathrm{ARP}_8\ x\ \mathrm{E}_{81})$$

$$TE_{PA01} = (3078\ x\ 9) + (2430\ x\ 9) + (1890\ x\ 9) + (1512\ x\ 9) + (560\ x\ 9)$$

$$TE_{PA01} = 85{,}230$$

- Difficulty of performing action k (Dk)

Scale	Level	Description
3	Low	Easy to be implemented
4	Medium	Moderate to be implemented
5	High	Hard to be implemented

- Effectiveness to Difficulty Ratio of Action (ETDk)

$$ETD_k = TE_k / D_k$$

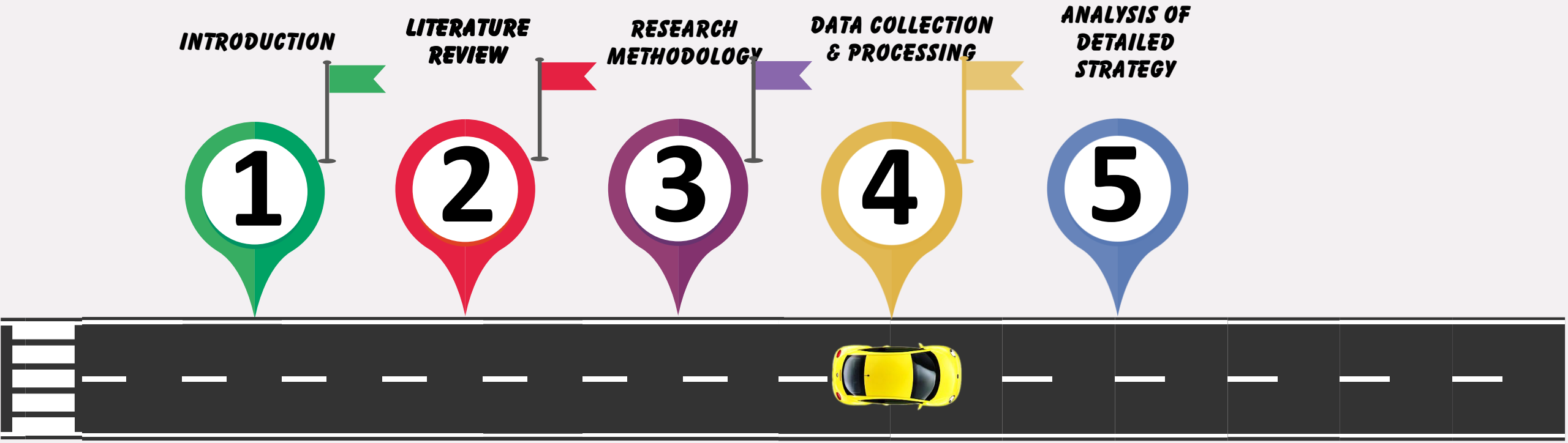
$$ETD_{01} = TE_{01} / D_{01}$$

$$ETD_{01} = 85{,}230/3$$

$$ETD_{01} = 28{,}410$$

EVALUATION OF IMPROVEMENT STRATEGY

(PAk)	Improvement Strategy	(TEk)	(Dk)	(ETDk)	Rk
PA01	The implementation of “Zero Error” principle.	85,230	3	28,410	1
PA06	Periodical evaluation.	44,406	3	14,802	2
PA04	Training to upgrade skill.	68,049	5	13,610	3
PA02	Inspection/quality control.	41,651	5	8,330	4
PA03	Reward and punishment system.	23,703	3	7,901	5
PA05	The coordinator makes plan, target, and gives directions.	23,402	3	7,801	6
PA13	Increase the standard in recruitment.	13,770	3	4,590	7
PA12	Increase the intensity of monitoring and controlling.	17,982	4	4,496	8
PA14	Periodical evaluation and simulation.	13,770	4	3,443	9
PA07	Optimization of maintenance scheduling and periodical checkup.	16,281	5	3,256	10
PA08	More selective in recruiting driver and co-driver.	7,776	3	2,592	11
PA10	Periodical direction and evaluation.	7,776	3	2,592	12
PA11	Tolerance of total stop duration.	7,776	3	2,592	13
PA26	Administration skill and ability test.	5,040	3	1,680	14
PA17	Increase the qualification standard of vendor.	5,103	4	1,276	15
PA19	Periodical evaluation with vendors.	5,103	4	1,276	16
PA20	Forecasting in air-freight and sea-freight shipment.	5,103	4	1,276	17
PA21	Order forecasting.	5,103	4	1,276	18
PA22	Lead time forecasting.	5,103	4	1,276	19
PA24	Addition and rejuvenation of vehicles.	5,103	5	1,021	20
PA25	Training for skill in planning optimization route.	5,103	5	1,021	21
PA27	Make clear and written timeline/lead time of each activity	2,916	3	972	22
PA09	Provide health insurance.	2,592	4	648	23
PA16	Re-evaluate the allocation of employee.	1,782	3	594	24
PA28	Timer system in every activity.	2,916	5	583	25
PA23	Reset delivery lead time.	1,701	3	567	26
PA15	Survey to customer.	2,125	4	531	27
PA18	Establish good relationship with vendors.	1,701	4	425	28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IMPLEMENTATION OF "ZERO ERROR" PRINCIPLE

- "Zero Error" = "Zero Defect".
- (+) Doesn't require high cost in implementation.
- (+) Any defect or error can be reduced preventively.
- (-) Takes quite long time.
- Requires high commitment.
- The efforts: carefulness, precision or accuracy, 5R system (*ringkas, rapi, resik, rawat, dan rajin*).
- Requires supervisor to be responsible in monitoring to ensure that the staff is focus in finishing their tasks and motivating staff or employees.

PERIODICAL EVALUATION

- Conducted not only in every division, but also in every team.
- Done at least monthly led by supervisor or team coordinator.
- (+) Does not require high cost in implementation
- (+) Easy to do
- (+) Effective in improving the performance in doing activity.

TRAINING IMPLEMENTATION

- Can be held once in four until six months.
  - Intrapersonal and Interpersonal Skill Training: motivation, integrity, attitude commitment, leadership, conflict management, team-working, communication, etc.
  - Training for Customer Service: communication, negotiation, handling complaint, problem solving, friendliness and responsiveness, etc.
  - Hard Skill Training: Administration, Route Optimization, Software, etc.
- (+) The result of training highly impact to the overall performance of company.
- (+) Develop human resources.
- (+) Increase employees' both soft skill and hard skill required in every position or job.
- (-) Requires high amount of money as the investment.

INSPECTION/QUALITY CONTROL

- To ensure that there is no error in the operation result.
- The company required to allocate few people to do inspection or quality control.
- Done in the end of these activities:
  - Goods and material unloading
  - Goods and material physical checking
  - Packaging coloring
  - Labelling
  - Goods and material storage based on GRN
  - Location put away recording
  - Goods and material picking
  - Goods and material packing
  - Goods and material loading

REWARD AND PUNISHMENT SYSTEM

- Reward = an appreciation form given by company to the employees that fulfill certain targets set by the company.
  - Incentive e.g., given to the most discipline staff).
  - “Staff of the Month”. It is the method of displaying staff’s photo who can fulfill certain criteria, e.g., the most 5R and not 5R, the most discipline and indiscipline, the most friendly and unfriendly, etc. it requires the role of manager to actively monitor and assess the performance of staff while working or doing tasks.
- Punishment is given to prevent a repetition of unexpected behavior and to strengthen the motivation to refrain from unexpected behavior.
  - warning or even retribution (retribution as a punishment can be given to the staff who breaks the goods).

- (+) To motivate the employee to keep doing good performance at work.
- (+) Can affect employee to give their best performance in working and doing tasks.

PLAN, TARGET, AND DIRECTION

- The supervisor makes the plan and target for staff in every task/activity.
  - E.g., the division and allocation of tasks for each staff in each team or division, the target of achievement, fulfillment, or time to finish.
  - In goods loading activity, there must be a plan about the allocation of goods or material loaded into truck to reduce goods and material damage.
  - In warehouse, there should be good allocation or management of goods storage.
  - For direction, the supervisor or team coordinator could give advice to do tasks well, motivation, and other things that could make the staff fulfill or achieve the target.

- (+) Reduce imbalance task division among employees in a team.
- (+) Increase the relationship between supervisor or coordinator and staff.
- (+) Create a good working environment.
- (+) Increase staff passion in working.
- (+) Staff can be more focus and directed in doing tasks.

INCREASING THE QUALIFICATION STANDARD IN RECRUITMENT

- Implemented for customer service staff and admin.
  - Increase the qualification of longer working experience or higher education → affect a person's way of thinking.
  - Not enough to just have ability in operating excel, for example. However, an admin must have skill in filing and processing data, high speed yet high accuracy in doing administration task, high ability in tidying file, etc.

- (+) Reduce customer dissatisfaction to the customer service probably caused by the lack of knowledge, the lack of problem solving ability, lack of politeness, etc.
- (+) An effective preventive action.

INCREASING THE INTENSITY OF MONITORING AND CONTROLLING

- In PT. Tiga Permata Logistik ad PT. Tiga Permata Ekspress, the most frequently happen problems are orders are not delivered to the due date or within a predetermined lead time (especially in consolidated service) and POD is not sent to the due date.
- Transport Control Team check the position daily → actively monitor the fleet position, especially if it stops in suspicious places.
- The company should be more often in contacting vendor, thus the vendor have willingness to submit POD as fast as possible.

PERIODICAL EVALUATION AND SIMULATION

- Conducted at least monthly.
- There should be a meeting
  - to evaluate staffs' performance,
  - discuss case study through Focus Group Discussion (FGD), and
  - simulation or presentation.
- (+) Increase staff ability and knowledge in problem solving
- (+) Increase staff ability and knowledge in handling complaint from customer.

MAINTENANCE SCHEDULING AND PERIODICAL CHECK-UP OPTIMIZATION

- Vehicles or fleets have the most important role in logistics service provider.
- Proper maintenance schedule to maintain vehicles owned in a good condition.
- Corrective maintenance → Preventive (scheduled maintenance).
- Should have a division which is special in determining the interval of preventive maintenance and conducting preventive maintenance scheduled.
- Should make a plan for vehicle periodical check-up.

No.	Police Number	Periodical Check-up						
		Tune-up	Engine Oil Change	Transmission Oil Change	Tires Appropriateness	Braking System	KIR Test	STNK
1								
2								
…								
10								


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CONCLUSION

1. There are six LSQ indicators : **Lead Time, Reliability, Completeness, Flexibility, Correctness, and Carefulness.** Each measurement is developed in this research.
2. Based on the measurement of six LSQ indicators, the indicator of **Completeness and Correctness is 100%, Carefulness indicator is 99.57%, Correctness indicator in warehouse which is 99.10%, Flexibility indicator is 95.10%, Lead Time 91%, Reliability is 74.86% in delivery and 50.87% in POD return**.
3. There are **12 risk agents** and **3 indicator problems prioritized** to be improved using strategies that have been made. These risk agents are staff carelessness (A4), staff indiscipline (A9), goods are not properly packed (A7), staffs are not responsive (A10), goods are not properly arranged into the truck (A6), human error in physical checking (A5), truck tarpaulins or box leakage (A12), driver stops repeatedly / too often (A15), lack of knowledge related to problem solving (A19), lack of ability in handling the problem or complaint (A20), lack of friendliness in customer service (A18), and human error in inputting data (A8). While the critical indicator problems are POD is not sent to the due date (P2), orders are not delivered to the due date (P3), and targeted lead time cannot be fulfilled (P1).
4. There are 28 improvement strategies in total and **10 strategies are prioritized**:
   - PA01 – The implementation of “Zero Error” principle.
   - PA06 – Periodical evaluation.
   - PA04 – Training to upgrade skill.
   - PA02 – Inspection/quality control.
   - PA03 – Reward and punishment system.
   - PA05 – The coordinator makes plan, target, and gives directions.
   - PA13 – Increase the standard in recruitment.
   - PA12 – Increase the intensity of monitoring and controlling.
   - PA14 – Periodical evaluation and simulation.
   - PA07 – Optimization of maintenance scheduling and periodical checkup.

SUGGESTION

1. All the improvement strategies can be implemented, not only limited with the strategies that have highest value.
2. The use of House of Risk (HOR) periodically to develop improvement strategy can continuously increase the LSQ indicators and mitigate risks potentially occur in the company.
3. For the further research, cost factor can be considered in developing strategy.


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THANK YOU